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# RETURN OF SHACKLETON FROM WEDDELL SEA

The daily press of June 1 reported the arrival, on May 31, at Port Stanley in the Falkland Islands, of Shackleton and five men of his expedition. The practical absence of summer weather had prevented him from carrying out his plan of crossing the Antarctic Continent. When near the land, his vessel, the *Endurance,* was caught in the ice. It was impossible to release her; nor was it possible to land. From that time on, for eight months, the vessel drifted until she was crushed by the ice and finally sank. That the expedition was ultimately saved from disaster is due to the leader's determination and skill. The following account is based on his cablegram to the *New York World,* published in its issue of June 2.

On December 6, 1914, the expedition left South Georgia. On the 8th heavy pack ice was encountered off the Sandwich Islands. The main pack was entered in 58° 40′ S. and 18° W., and Coats Land was sighted on January 10, 1915. Subsequently a new land was discovered, with two hundred miles of coast line and large glaciers discharging into the sea. This was named Caird Coast in honor of James Caird, one of the supporters of the expedition. It presumably connects Coats Land with Prince Regent Luitpold Land.

Abnormal weather conditions prevailed. Contrary to all expectations the temperature was below zero (Fahrenheit) in early February. By the end of the month it fell to 49°, and the old and the young pack were cemented together. Even the animal life was affected by the severe weather, the seals migrating northward in great numbers.

The *Endurance* drifted in a southwesterly direction along the coast as far as what is probably the head of Weddell Sea, as indicated by Filchner's discovery in 1912 of the junction here of the main land-mass and the ice barrier.[1] The southernmost point reached lay in 77° S. and 35° W. From here the drift took on a northwesterly course.

In June began the menace of ice pressure. During the following months the vessel experienced a foretaste of her final fate. On several occasions she was lifted bodily out of the ice; at first she stood the strain, but finally the screwing motion of the floes caused the ship's sides to open. The end came on October 27. The terrific pressure culminated in tearing out the stern and rudder posts, the main deck breaking upward and icebergs piercing the ship. She finally sank on November 20.

After a futile attempt to proceed, the party camped on the floe after saving all the provisions, equipment, and scientific data. From the place where the *Endurance* was crushed, in 69° 5′ S. and 51° 32′ W., the drift continued slowly northward. At the end of the year another attempt was made to go forward. In five days the party advanced only nine miles; the boat, which had to be hauled over the ice, would sink in because of the rotten surface. So the attempt was given up.

In January the Antarctic Circle was crossed. The drift became more rapid. Finally on March 23 the party sighted the distant peaks of Joinville Island, the farthest outpost of Graham Land, but the condition of the ice precluded any attempt to reach the land. On April 8 Clarence Island, the most easterly of the South Shetlands, was sighted. On April 8 the floe on which the camp was pitched split to pieces under the influence of the swell. As the ice opened the three boats were launched. After various narrow escapes Elephant Island, the next major island west of Clarence Island, was reached on April 15. Inaccessible cliffs made landing difficult. Finally a foothold was gained on a beach which, however, was covered at high tide. To get out of the reach of the waves a cave was hollowed out of the ice above.

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[1] Erich Przybyllok: Deutsche Antarktische Expedition: Bericht über die Tätigkeit nach Verlassen von Südgeorgien, *Zeitschr. Gesell. für Erdkunde zu Berlin,* 1913, pp. 1-17, with map, 1:5,000,000 (condensed translation in *Bull. Amer. Geogr. Soc.,* Vol. 45, 1913, pp. 423-430).

Owing to the shortage of food and the inadequate protection against winter, Shackleton decided to try to reach South Georgia, 750 miles distant, and secure relief. On April 24 he set out in a 22-foot boat, with five volunteers. The remaining twenty-two members of the expedition he left in charge of Frank Wild, second in command. On May 8 the cliffs of the west coast of South Georgia were sighted, but it was not possible to land until the 10th and to reach a safe haven, King Haakon Bay, until the 12th. On the 19th Shackleton, with two of the men, crossed the island to Strömnes whaling station on the east coast, which was reached the next day.

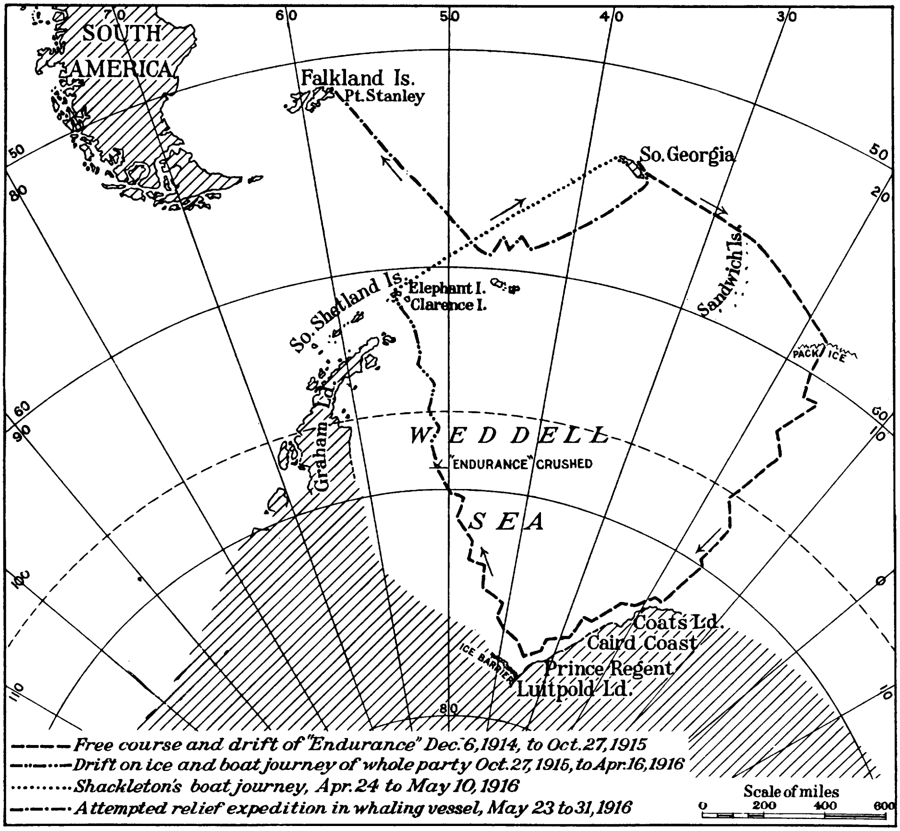
SOUTH AMERICA
Falkland Is.
Pt. Stanley
So. Georgia
Sandwich Is.
So. Shetland Is.
Elephant I.
Clarence I.
Graham Ld.
WEDDELL SEA
"ENDURANCE" CRUSHED
PACK ICE
Coats Ld.
Caird Coast
Prince Regent Luitpold Ld.
ICE BARRIER
70
60
50
40
30
20
50
60
70
80
90
80
———Free course and drift of "Endurance" Dec. 6, 1914, to Oct. 27, 1915
—··—··Drift on ice and boat journey of whole party Oct. 27, 1915, to Apr. 16, 1916
·········Shackleton's boat journey, Apr. 24 to May 10, 1916
—·—·—A ttempted relief expedition in whaling vessel, May 23 to 31, 1916
Scale of miles
0 200 400 600

FIG. 1—Sketch map of the Weddell Sea area showing the course of the Shackleton expedition, 1914-16. Scale, 1:38,000,000.

Only the places and positions given in the text are at present definitely known; away from these the courses should be considered approximate and diagrammatic. The position assigned to Caird Coast is inferential.

The manager of the station gave every assistance and despatched a boat that same night to bring around the remaining three men of the party. Realizing the urgency of the case he and the managers of the three other whaling stations on the east coast hastened to equip a whaling vessel. By the morning of May 23 it was ready to leave.

The vessel now started for Elephant Island. On the 26th she encountered pack ice and, owing to her unprotected condition and small size, she was forced to stand north. The same situation occurred on the two following days. This and a shortage of coal finally decided Shackleton to give up the attempt and make for the Falkland Islands, where he arrived on May 31.

Press despatches dated June 6 reported that the government of Uruguay had offered to send the small steamship *Instituto Pesca* of the Bureau of Fisheries from Montevideo to the rescue of the stranded members of the expedition. On June 16 the vessel was at the Falkland Islands, outward bound, with Shackleton on board. On June 27 she was reported to have returned there without fulfilling her mission, not having been able to approach Elephant Island nearer than twenty miles because of the ice. The twenty-two marooned men had, when Shackleton left them on April 24, five weeks' provisions and full rations, exclusive of the possibility of obtaining seals. Nevertheless, he thinks that they will be able to hold out until another rescue party, provided with an ice-breaker, can push through to them. On the opposite side of the Antarctic ten other members of the expedition are waiting to be relieved, as related in the May number of the *Review* (p. 378).

Although the ambitious project of crossing the Antarctic Continent was not carried out, the expedition has had important results. Our knowledge of Weddell Sea has been materially advanced. The drift of the *Endurance,* in its northward section, was about 200 miles west of the hitherto westernmost course, that of the *Deutschland* under Filchner. The expedition, as Shackleton points out in his dispatch, definitely disposes of Morrell's "New South Greenland," over the alleged position of which soundings showed 1,900 fathoms of water. The position and trend of this land as given in the original report[2] make, it would seem, the explanation offered by Mill[3] and by Greely[4] in their Polar manuals self-evident, that Morrell's longitudes were incorrect by about 10° and that he skirted the eastern coast of Graham Land.

With our present knowledge, we may define Weddell Sea as a wide embayment of the South Atlantic enclosed between the main unfolded mass of the Antarctic tableland on the south (Coats Land, Caird Coast, Prince Regent Luitpold Land) and, on the west and north, the folded mountain system of Andean structure and affinity represented by Graham Land, the South Orkneys, the Sandwich Islands, South Georgia, and the connecting submarine ridges. This gulf is open to the east and—probably—closed to the west. Into this pocket the ice is driven by a westerly current which flows along the margin of the land in response to the prevailing easterly winds created by the barometric high-pressure area which lies over the Antarctic Continent. Locally, Weddell Sea is the seat of a low-pressure area, according to the observations of the Nordenskjöld, Bruce, and Filchner expeditions. Into this area the winds blow clockwise in spiral form. The ice on entering the embayment from the east is thus carried along its shores first southwest, then west, north, and northeast until it emerges into the open sea. The drift of the *Endurance* confirms the existence of this circulatory system.

But the ice conditions vary greatly. On the first voyage into this region Weddell, in 1823, reached the remarkably high latitude of 74° 15′ S. without meeting obstruction. A few weeks later Morrell probably reached 70° 14′ S. In 1903 Bruce was beset in 70° 25′ S. and about 18° W. From here to about 60° S. and 45° W. the pack presented an unbroken front. In 1912 Filchner, although frequently meeting pack ice southward from 60° S., was able to proceed as far as 77° 48′ S. near the junction of the land-mass with the ice barrier. On his return he was, however, held fast in 74° S. and drifted north to about 64° S., where the ship was released from the ice. That Shackleton entered the pack ice as far north as 58° 40′ S. and was held fast in it throughout his whole drift from Coats Land to the northern end of Graham Land indicates the extreme conditions prevailing in 1915. These variations may be due, Dr. Henryk Arctowski suggests in a recent article,[5] to a periodic shifting of the Antarctic high-pressure area, which in turn would affect the low-pressure area of Weddell Sea, with consequent changes of the wind direction and the dependent ice circulation in a given area. The shifting of the Antarctic anticyclone he ascribes to the general variations of atmospheric pressure all over the world the existence of which recent researches seem to have demonstrated.

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[2] Benjamin Morrell, Jr.: A Narrative of Four Voyages to the South Sea, North and South Pacific Ocean, Chinese Sea, Ethiopic and Southern Atlantic Ocean, Indian and Antarctic Ocean from the Year 1822 to 1831, etc., J. and J. Harper, New York, 1832. Reference on pp. 69-70.

[3] H. R. Mill: The Siege of the South Pole, Stokes, New York, 1905, pp. 109-110.

[4] A. W. Greely: Handbook of Polar Discoveries, Little, Brown & Co., Boston, 5th edit., 1910, p. 306.

On these matters the oceanographical and meteorological observations, which were maintained throughout the voyage, as Shackleton reports, will throw a flood of light.

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[5] Shackleton's South Polar Expedition: The Value of His Scientific Observations, *Scientific American*, June 17, 1916, pp. 636 and 645.